

INSTRUCTIONS FOR USING THE VOICE BOX

IF YOU HAVE A DISK DRIVE:

- * Plug the voice box into the Disk Drive.
- * Switch-on the power using your own DOS Master Disk, and Basic cartridge.
- * Put in the Alien Disk.
- * If you have 16K memory, type RUN "D:VB
- * If you have 32K memory or more, type RUN "D:VBRF
- * Follow the prompts.

IF YOU HAVE A PROGRAM RECORDER"

- * Insert the cassette the right way up according to the amount of ram you have, rewinding it if necessary.
- * Plug in your Basic cartridge.
- * Type CLOAD, hit return and start the recorder, hit return again.
- * Type RUN.
- * Follow the prompts.

IF ALL ELSE FAILS, READ THE INSTRUCTIONS.

WHAT IT DOES

The voice box plugs into the serial port of an Atari 400 or 800 computer, and translates computer codes into speech.

The sound comes out of the TV speaker. The computer codes must originate as text strings in a Basic program.

The programs supplied with the Voice Box translate English text into the phonetic codes which constitute its native tongue and also allow you to teach it to pronounce words such as names which it did not know before. The programs have menus and prompts to help you store the pronunciation dictionaries on disk or tape. If your computer has 32K or more memory then you can also try the random sentence generator, which speaks simple grammatical sentences using words you can choose, and you can run the version which incorporates the talking face, which provides some lip-sync animation.

Instructions are given in a later section which should help you incorporate the voice box in other basic programs.

HOW TO LOAD THE PROGRAM

If you are reading this then you have probably already tried to run the program and something went wrong, most likely because the program was too big for your machine's memory.

CASSETTE SYSTEMS

There are two versions, one for computers with 16K of memory and one for 32K or more. The smaller version does not incorporate the random sentence generator or the face. Both versions start at the very beginning of the tape but on opposite sides.

THE 16K VERSION After loading the program, type RUN. After a few moments a prompt will appear inviting you to set up the cassette with the pronunciation dictionary. The dictionary supplied is the next file on the tape so you can just type D return. If, later on, you add to the dictionary you would at this point insert the cassette with your dictionary, and type D return. One other alternative is to type P return. This tells the program to use the bare phonetic dictionary that was already loaded along with program.

After the dictionary is loaded the program will tell you to unplug the program recorder and plug in the voice box. You can then type in sentences and have the machine speak them.

CASSETTE VERSION FOR 32K OR MORE The loading procedure is identical to that for the 16K version until you come to try the random sentence generator. This requires that you load a file containing the words to be used in the sentences. The next file after the pronunciation dictionary will do to start. You will be able to alter the words and add your own, but you must begin with some words of each type.

OTHER POINTS FOR TAPE USERS

The cassette supplied is write protected so if you want to use it to save dictionaries or random word lists you must first stick tape over the protect tab holes.

A bug in the Atari operating system (still unfixed as of March 1982) requires that you type LPR. before doing a save. This causes an error message which you should ignore. If you want to modify or copy the program you must remember to do this.

INSTRUCTIONS FOR USERS WHO HAVE A DISK DRIVE

Power up your system in the usual way with an Atari disk that contains DOS.

Insert the Alien Disc and type run "D:VB. If you have 32K or more type run "D:VBRF after a short time the program will respond by asking you to specify which dictionary. You should type a number from 1 to 3 to use one of the supplied dictionaries, or you may hit return to use the basic phonetic codes already loaded along with the program. You would do this if you wanted to construct a new dictionary from scratch.

AFTER THE DICTIONARY IS LOADED A message will tell you to plug in the voice box and hit return. The voice box connects to the disk drive or the interface box.

If all is well a list of options should appear on the screen and you should hear the plea "PLEASE TEACH ME TO SPEAK" or "YEHS MAHSTER" this is an example of the phonetic spelling into which everything must be translated for the voice box to speak. This translation task can be done by the computer using one of the dictionaries.

HOW TO BUILD UP YOUR OWN DICTIONARY

Simply type the phonetic spelling followed by = and the proper spelling. For EXAMPLE: SPEK=SPEAK. You will probably see that the computers memory will soon be exhausted since each word must take about ten bytes. The trick is to enter word fragments. or INSTANCE: EK=EAK teaches the program several words: SPEAK, PEAK, LEAK TEAK and probably many more. One might go a step further and enter: E=EA since this is the general case. Exceptions

such as the word 'PEAR' must be entered separately. The program automatically gives priority to longer entries. The appendix gives the complete list of phonetic codes. These have become something of a standard since Byte magazine published articles on using the votrax SC-01 chip in fall 1981.

SPACES AND HYPHENS

One unique feature of the Alein System is that phonetic codes and English text may be freely mixed without changing modes. When entering phonetic codes, it is usually best to separate them with hyphens, e.g. "D-A-Ay".

If you want to enter a word fragment that only applies when it occurs at the beginning of a word then you should include a space immediately after the =. For suffixes, you must use the underline character instead of a space because Atari basic does not recognize spaces at the end of a line. One should use prefix definitions carefully since exceptions to them must also be entered with leading spaces.

DO YOU REALLY WANT TO DO THIS?

At some point the program may query a definition. It does this when you are about to make an irreversible change. If you respond with an N the change will be aborted.

ERASING AN ENTRY

An entry can be erased by typing = followed by the word to be removed, e.g. =WORD

SAVING A DICTIONARY

After you type *D, the program will ask you to name the dictionary file that is to receive the data. If you type (for example) SWAHILI, a disk file named DSWAHILI will be created. Do not type a number unless you want to overwrite one of the existing dictionaries. When you next run the program, you would recall your dictionary by responding with SWAHILI instead of a number.

VOICE PITCH CONTROL

You can make the voice box talk in one of four pitch registers. At the beginning of each line of speech it resets itself to the next to lowest. You can shift to a higher register by making the first character in the line a slash. Two slashes will take it to the highest pitch. If you want to turn Beethoven in his grave, type:

//DE. DE. DE...\\DEEEE

This is about the limit of the musical possibilities of the Alien Voice Box.

THE PHRASE MEMORIES

This little feature was added to save your having to type in the same thing twice. There are two memories which can each save or recall a single line of text. At the end of a line you want to save, add >1 or >2. At any other time you can recall that line by typing 1< or 2<

THE RANDOM SENTENCE GENERATOR

After you type *R you will be in another part of the program where new commands apply. When you first enter it the program will ask if you want the standard words or the words you saved last time. If there was no last time you must of course take the standard words.

Every time you hit the return key the voice box will compose a new random sentence. You can get it to repeat the sentence by typing R. *L will return you to the phonetics program with the last sentence spoken saved in phrase memory 1.

TO CHANGE THE WORDS USED FOR RANDOM SENTENCES

There are nine different types of words - nouns, verbs, adjectives etc. You can add to, or change the words in each group. If you want a particular word to have a greater chance of being chosen then you should enter it twice or more times. Note that the words in a list must be separated by commas, and that you are allowed only three lines of words. The keyboard will squawk when you get near the limit.

THE SPEED CONTROL KNOB

This simultaneously affects the speed and pitch of the speech, and gives a variety of voice personalities, particularly when used in conjunction with the \and/ pitch controls.

THE TALKING FACE

This little extra, available only in the 32K versions of the program is invoked by typing *F while in the phonetics mode. You can restore the normal full screen of text by typing *T at any time.

DICTIONARY SPACE AND THE LIMIT OF MEMORY

If you want to build up a very large vocabulary and you have more than 32K of RAM, you must redimension the two strings that hold the dictionary. Do this by altering the value of VXM in line 3. If you have a 48K system this may be as large as 11000. In that case a total of some 20,000 bytes would be available for storing words. If, on the other hand, you need more memory to add features to the program then you can reduce VXM. If you make it too small then there will be an error halt when loading a dictionary.

The 16K disk version, (program VB), already has VXM set as large as possible.

When you type *M to see how much memory has been used, the percentage given is referred to VXM. The function FRE(0) will tell you how much is left for adding basic statements.

HOW TO INCORPORATE THE VOICE BOX IN YOUR OWN BASIC PROGRAM

One way of doing this is to load either VB or VBRF, and build your own program around it. If you are short of memory you can delete lines that you don't need. An obvious place to start is with the menus, and vowel and consonant lists.

If you won't be saving a dictionary you can delete line 2030 and lines 4000 to 4210. If you don't need to see the dictionary, delete 2040 and 5000 to 5060.

If you won't be changing the dictionary, then lines 1015 to 1480 can go, but you should in this case ensure that no string to be spoken ever includes an =, as this will mess up the dictionary.

Atari basic sometimes goes wrong if you delete many lines from a program, and everything disappears. This seems less likely to happen if you run the program at frequent intervals.

Such a stripped down version, intended to be incorporated in a larger program has been included on the disk with the name VBS. It is in the list form so that it may be merged with another program using the enter command. It can read a dictionary from the disk, and pronounce words using it.

The structure of the program is quite simple:

Lines 3 to 85 load the machine code.

Line 100 calls the subroutine at 3000 which reads a dictionary from disk.

Lines 131 to 305, (which could be omitted), remind you to plug in the voice box and verify that it is ready.

It then jumps to 4000, where your program would normally start. Note that the actual talking is done by the subroutine at 1000 which speaks A\$.

This program leaves some 3700 bytes free in a 16K disk system. If you need more dictionary space, and your program occupies less than 3700 bytes, then you should increase VXM in line 3.

ASSEMBLY LANGUAGE PROGRAMING

For those select few who write in assembly language a file named VB.OBJ is included on the disk. This is a relocatable subroutine, (assembled at \$600), which delivers a single byte of data to the voice box. This byte should be passed in register X. On returning, all registers are restored, and no other locations are altered.

It occupies 95 bytes and executes in about 2.5mS. If the voice box is ready for data, and up to 250mS if it is not. The data byte corresponds to the hexadecimal column in the list of phoneme codes in the appendix. \$40, \$80 or \$C0 should be added to raise the pitch.

Note that most phonemes will make a sound that persists until the next phoneme is delivered.

WARRANTY INFORMATION

The Alien Group will repair or replace any part of the product which fails due faulty materials or workmanship within one year from the date of purchase. All products including disks are thoroughly tested before leaving the factory.

If your Voice Box should fail, send it securely packed, postage prepaid and insured to the Alien Group. A charge of \$10.00 will be made to cover postage and handling. You may include a check or Money Order for this amount, or pay C.O.D. when the product is returned. It is most important when returning goods for repair to add a note saying precisely how it has failed.

If the disk or cassette fails to load when you first try it, then you should within 14 days return it to the store for a free replacement. Direct customers of the Alien Group may return it to us by mail within 14 days, together with a copy of the sales slip for a free exchange.

Replacement disks or cassettes may be purchased by mail from the Alien Group for \$10.00.

In a program using animated graphics it may be undesirable for the action to stop while waiting for the voice box to finish each phoneme. In this case the calling program can check if new data is needed before calling the delivery subroutine by looking at BIT 4 of \$D20F. A1 means the voice box is still busy with the last byte. At the beginning of the program, code \$03 (=silence) should be delivered unconditionally. This ensures that the voice box is set up correctly.

APPENDIX - Catalogue of Disk Programs

If you use DOS to look at the directory of files you will see a rather unrevealing list of cryptonyms. Here is an explanation of that list.

VB	Basic program for <u>VOICE BOX</u> for systems with only 16K.
VBRF	Basic program for <u>VOICE BOX</u> incorporating <u>RANDOM</u> sentences and talking <u>FACE</u> , for systems with 32K or More.
D1	Pronunciation dictionaries. D1 is the largest that can be loaded by program VB
D2	D2 spells the words out.
D3	D3 is the largest.
DFWORDS	Default <u>File of WORDS</u> for random sentence generator
UWORDS	<u>Users File of Words</u> for random sentence generator.
VB.OBJ	Machine language subroutine to deliver one phoneme byte.
VBS	Stripped down version of basic program intended to be incorporated in other programs. Use the enter command to merge VBS with another program.

APPENDIX

PHONEME LIST

Phoneme Symbol	Example	Time (mS)	Hex- Code	Phoneme Symbol	Example	Time (mS)	Hex- Code
A	<u>DAY</u>	185	20	K	<u>TRICK</u>	80	19
A1	<u>MADE</u>	103	06	L	<u>LAND</u>	103	18
A2	<u>ENABLE</u>	71	05	M	<u>MAT</u>	103	0C
AE	<u>DAD</u>	185	2E	N	<u>SUN</u>	80	0D
AE1	<u>AFTER</u>	103	2F	NG	<u>THING</u>	121	14
AH	<u>MOP</u>	250	24	O	<u>MORE</u>	185	26
AH1	<u>FATHER</u>	146	15	OI	<u>ABOARD</u>	121	35
AH2	<u>HONEST</u>	71	08	O2	<u>FOR</u>	80	34
AW	<u>CALL</u>	250	3D	OO	<u>BOOK</u>	185	17
AW1	<u>LAWFUL</u>	146	13	OO1	<u>LOOKING</u>	103	16
AW2	<u>SALTY</u>	90	30	P	<u>PAST</u>	103	25
AY	<u>DAY</u>	65	21	PAØ	<u>NO SOUND</u>	47	03
B	<u>BAG</u>	71	0E	PA1	<u>NO SOUND</u>	185	3E
CH	<u>CHIP</u>	71	10	R	<u>RED</u>	90	2B
D	<u>PAID</u>	55	1E	S	<u>PASS</u>	90	1F
DT	<u>BUTTER</u>	46	04	SH	<u>SHOP</u>	121	11
E	<u>MEET</u>	185	2C	STOP	<u>NO SOUND</u>	47	3F
E1	<u>BE</u>	121	3C	T	<u>TAP</u>	71	2A
EH	<u>GET</u>	185	3B	TH	<u>THIN</u>	71	39
EH1	<u>HEAVY</u>	121	02	THV	<u>THE</u>	80	38
EH2	<u>ENLIST</u>	71	01	U	<u>MOVE</u>	185	28
EH3	<u>JACKET</u>	59	00	U1	<u>YOU</u>	90	37
ER	<u>BIRD</u>	146	3A	UH	<u>CUP</u>	185	33
F	<u>FAST</u>	103	1D	UH1	<u>UNCLE</u>	103	32
G	<u>GET</u>	71	1C	UH2	<u>ABOUT</u>	71	31
H	<u>HELLO</u>	71	1B	UH3	<u>MISSION</u>	47	23
I	<u>PIN</u>	185	27	V	<u>VAN</u>	71	0F
I1	<u>INHIBIT</u>	121	0B	W	<u>WIN</u>	80	2D
I2	<u>INHIBIT</u>	80	0A	Y	<u>ANY</u>	103	29
I3	<u>INHIBIT</u>	55	09	Y1	<u>YARD</u>	80	22
IU	<u>YOU</u>	59	36	Z	<u>ZOO</u>	71	12
J	<u>JUDGE</u>	47	1A	ZH	<u>AZURE</u>	90	07

COMBINATIONS

A1-AY-Y	<u>GAME</u>	UH3-AH2-U1	<u>HOUSE</u>
AH1-EH3-Y	<u>TIME</u>	01-U1	<u>NOTE</u>
UH3-AH2-Y	<u>FIGHT</u>	01-UH3-Y	<u>TOY</u>
AH-1-UH3-U1	<u>COW</u>	Y1-IU-U1	<u>MUSIC</u>

J should generally be DJ and CH should be TCH